

Seven Reasons Why Radioisotopic Dating is Untrustworthy

by Brian Thomas, MS

A Summary of *The Mythology of Modern Dating Methods* by John Woodmorappe

“The age of our globe is presently thought to be some 4.5 billion years, based on radiodecay rates of uranium and thorium. Such ‘confirmation’ may be short-lived, as nature is not to be discovered quite so easily. There has been in recent years the horrible realization that radiodecay rates are not as constant as previously thought, nor are they immune to environmental influences. And this could mean that the atomic clocks are reset during some global disaster, and events which brought the Mesozoic to a close may not be 65 million years ago but, rather, within the age and memory of man.” (Frederic B. Jueneman, FAIC, “Secular Catastrophism,” *Industrial Research and Development*, June 1982, p. 21.)

Central to the intellectual battle over worldviews is the question of our origins: either our cosmos, earth, and its inhabitants came about by themselves, or somebody placed us all here. We propose that somebody placed us here, and that this is most reasonable. It is equally reasonable that this somebody has revealed Himself to us through the Bible. By counting the chronologies it contains, the Bible teaches plainly that the earth is about 6,000 years old. This contradicts the evolutionary belief that it all came about spontaneously over eons of time. The concept of billions of years of earth history is commonly bolstered by radioisotopic dating. It would therefore be prudent for a defender of the Bible and its chronology to provide a balancing critique of radioisotopic dating techniques; hence this article. The book *The Mythology of Modern Dating Methods* (or *Mythology*) by John Woodmorappe exposes enough flaws with radioisotope dating (radiodating) techniques and their interpretations to make it very clear that they are totally unreliable. If radiodating is indeed unreliable, then the Biblical chronology should be reconsidered as being historically accurate in its plainly understood format.

Here we present summaries and justifications of poignant conclusions from *Mythology*. These conclusions are based on the extensive literature research that Woodmorappe has conducted. The conclusions that we have chosen to present from *Mythology* are the following: 1) Radiodating is loaded with assumptions, special pleading, and selective manipulation of data. 2) There are no universal, objective reliability criteria which a geochronologist can use to discern ‘acceptable’ dates, which means that good dates are determined by interpreter’s beliefs. 3) Historically, geochronology rests on self-serving cycles where new methods are touted as being supremely

authoritative when first used, but only result in additional rationalizations to explain new unwanted data before being replaced by a new method. 4) Dates are primarily rejected on an after-the-fact basis, with the presupposition of the million/billion year geologic column as the ultimate criteria for selecting dates. Further, almost any date obtained can be interpreted and rationalized after-the-fact. 5) Biostratigraphy, magnetostratigraphy, and isotope dating are all manipulated to form a contrived agreement. 6) High closure temperatures are irrelevant to the supposed closed system status of isotope dating because all systems are susceptible to fluid processes. 7) Finally, there is no objective way to distinguish an isochron resulting from long-term radioactive decay from one resulting from geochemical processes. Many quotes in this paper from evolutionary scientific literature are taken from quotes in *Mythology*, so only the original author's name is included with the page number from *Mythology*. Other quotes have full references in the text.

We have not provided here an explanation of the science behind radiometric dating. However, it will probably be the case that the more understanding the reader has of this science, including both the empirical and historical or assumptive aspects, the more the reader will glean from this document. We therefore suggest the following possible resource options: geology textbooks, encyclopedias, or [The Young Earth](#) by John Morris.

1) Radiodating is loaded with assumptions, special pleading, and selective manipulation of data. As Creationists have been teaching for many years, there are at least three basic unprovable assumptions that must be made when using any natural timeclock process to attempt to date rocks (or any ancient thing):

Assumption A: The timeclock process, which in the case of isotope dating consists of radioactive elements that undergo nuclear decay to ultimately become inert elements (daughter product), **must have began at zero**. In other words, **all** of the inert element present in a rock sample is assumed to be the result of radioactive decay. However, the presence of these elements has various causes: "Was it possible that this procedure set up an ion exchange of Na for K in the feldspars during preparation, resulting in apparently old ages?...These new results support the ion exchange hypothesis." (Swisher et al., p.59). Elements (including parent and daughter products of isotope systems) can move or be replaced by certain other elements. To know with surety if the ratio of daughter to parent was 0% to 100% at the time the rock was formed, someone would have to have been there to have observed or measured it.

Assumption B: The timeclock process must be a closed system, so that no daughter or parent product can escape or be added. The potassium-argon (K-Ar) method does not meet this requirement: "It is well known that argon can be added during heating to many minerals..." (Anderson, p.58). All isotope methods are susceptible to open-system behavior at relatively low temperatures when combined with fluid transport. "Thirdly, to obtain the age...the material must have remained a closed chemical system since its formation... Unfortunately, geological materials and environments do not often meet this requirement" (Durrance, p.28). Further evidence that isotope methods are not closed systems is the fact that so many discrepant dates are blamed on 'open system behavior' by evolutionists: "Unfortunately, the U-Pb and Th-Pb systems rarely stay closed in silicate rocks, due to the mobility of Pb, Th, and especially U, under conditions of low-grade metamorphism and superficial weathering" (Dickin, p.33). "As discussed in a later section, Rb-Sr ages are commonly reset by later thermal events" (Bickford, p.32). If indeed these elements can be transported this readily, then this assumption is invalid, and the whole dating method based on it is now on shifting ground.

Assumption C: The rate of the timeclock process must have been constant since its inception. "Radioactivity is thus shown experimentally not to be, as described by Millikan, 'an unalterable property of the atom.' Half lives are NOT constant." (H.C. Dudley, Industrial Research, Nov 15, 1974, p.46). The rates of decay of radioactive elements have been measured and tested for constancy. They seem to be stable in today's world, but may have been affected in the past "[1] if the mineral is bombarded by high energy particles from space (such as neutrinos, cosmic rays, etc.); [2] if there is, for a time, a nearby radioactive mineral emitting radiation; [3] if physical pressure is brought to bear upon the radioactive mineral; or [4] if certain chemicals are brought in contact with it." (V. Farrell, *Evolution Cruncher*, <http://www.evolution-facts.org/1evlch07a.htm>)

"The deviations [in decay rate] are a function of the environment...we are each convinced that the thesis of '*decay independence*' and the thesis of '*decay constancy*' needs considerable revision and reexamination...at a minimum, an unreliability factor must be incorporated into the age-dating calculations " (J. Anderson and G. Spangler, "Radiometric Dating: Is the 'Decay Constant' Constant?" in *Pensee*, Fall, 1974, p. 34).

We recognize that these assumptions must be made for any natural process to be used to date things of unknown origin. Consider, however, that an eyewitness account is not subject to these assumptions. We propose that the Bible is just such an eyewitness historical record, having

been passed down to us in accurate form. Our purpose here, however, is not to analyze the trustworthiness of the Biblical record, though our hope is that desire for such a study will be awakened by the present critique of radiometric dating.

In addition to assumptions A, B, and C above, examples of geochronologists using special pleading and selective manipulation of data will be included throughout this paper. Here is a common interpretation of isotope-dating results that disagree with standard geologic paradigms: “...the Anadarko basin...is at least 300 m.y. This means that the cosmogenic ^{129}I component decayed to insignificant levels long ago... the most likely source for the ^{129}I measured in these brines is...the upper Devonian – Lower Mississippian Woodford Shale” (Moran, 26). As Woodmorappe points out, “no consideration is made for the possibility that ^{129}I exists in Paleozoic rocks because they are much younger than 300 million years.” “In the majority of cases the ages are clearly off and the data disappear in a lab datafile” (Jagoutz, p.16). “...it is customary to accept the oldest apparent age measured as the best or minimum estimate of the actual time of closure of the system” (Odin, p. 38).

2) There are no universal, objective reliability criteria which a geochronologist can use to discern ‘acceptable’ dates. “The internal consistency demonstrated above is not a sufficient test of the accuracy of the age determinations; they must also be consistent within any age constraints placed on intrusion by fossils in the country rocks.” (I.S Williams *et al.*, *Journal of the Geological Society of Australia*, v. 22 n.4 p.502, 1975) Discordant (disagreeing) dates are the **rule**, not the exception. “The common occurrence of discordant results in isotopic geochronometry presents an intriguing and complicated problem” (E.J. Catanzaro and J.L. Kulp, *Geochemica et Cosmochemica Acta*, v.28 p. 87-124, 1964). If discordant dates were rare, we could have more confidence that some internal reliability mechanism were producing consistent date results, but, “Unfortunately, geochronologic data is not always of uniform quality or reliability. Furthermore, lack of rigor in interpreting geochronologic data has led in many cases to inaccurate, or overly simplistic, tectonic models...” (Samson, p.44). Let the experts speak about the volume of discordant isotope dates:

- “When determined by several methods (K-Ar, Rb-Sr and fission track), radiometric ages for coexisting minerals in a metamorphic or igneous rock generally differ because of different closure temperatures...” (Itaya and Takasugi, p.30). Notice how **any** discrepant date can be explained away after-the-fact by blaming natural processes. Geochronologists use the following processes

which affect isotope systems to ‘explain’ discordant dates **after-the-fact**: source-mixing effects, initial isotope inhomogeneities, loss/gain of isotopes, xenocryst contamination, reheating events, excess argon, and inherited zircons. This large array of natural intrusions into isotope systems is almost never used to question the validity of the systems themselves, but they should be. Almost any date obtained can be explained away after-the-fact, so that the ultimate criterion for determining good dates is the presumption of millions/billions of years.

- “Even in igneous rocks, discordant mineral dates are more often encountered than concordant dates” (Durrance, p.29).
- “Natural zircon typically displays an inconsistency of age values obtained on the basis of the $^{206}\text{Pb}/^{238}\text{U}$, $^{207}\text{Pb}/^{235}\text{U}$, and $^{207}\text{Pb}/^{206}\text{Pb}$ isotopic ratios” (Levchenkov et al., p.29).
- “Subjective and, in many instances, incorrect use of radiometric data has become endemic in the earth science literature. Mathematical analysis of imperfect and, in many cases, highly subjective data sets leads to dubious conclusions” (Baksi, p.8). “...U-Pb zircon ages do not necessarily define a more reliable time of crystallization...even when the U-Pb age is older, concordant, and has a very small analytical precision” (Wooden et al., p.53).
- Is it wise to trust in a dating system where “...ages determined on basic igneous rock by the Rb-Sr whole-rock technique can be greater than the true age by many hundreds of millions of years” (Brooks et al., *Science*, v.193, 1976, pp.1086-1094)?

3) Historically, geochronology rests on self-serving cycles where new methods are touted as being supremely authoritative when first used, but only result in additional rationalizations to explain unwanted data before being replaced by a new method.

- Isotope dating was founded on the pre-existing belief of ‘millions of years’.
- Early methods were touted as being nearly infallible, but “the inherent limitations of these early instruments led to erroneous conclusions: -That radioactive decay rates are constant. -That radioactivity results from processes which involve only the atomic nucleus.” (H.C. Dudley, *Industrial Research*, Nov 15, 1974, p.46). These erroneous conclusions have stood all this time, masquerading as infallible to the layperson. Consider the following observations:
- In the 1940’s, the U-Th-He method was used. Though initially they were considered amazing evidence, modern geochronologists know that “the lead-alpha dates stunk” (Glen, p.34).

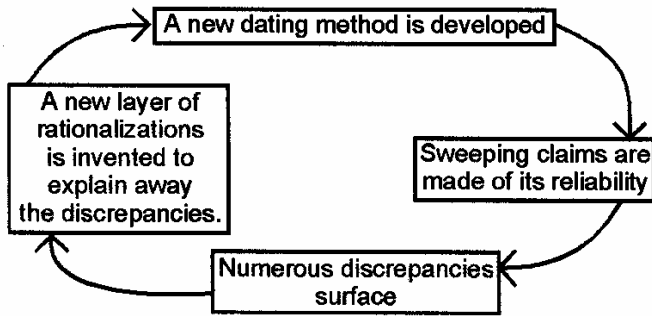


Figure 12. The cycle of inflated claims about isotopic-dating methods.

[From *Mythology*, p. 28]

- So, in the 1950's, they were replaced by K-Ar and Rb-Sr methods. Why were these methods chosen? “The results were encouraging, as the ages were reasonable compared to the suggested time scale” (Clauer, 34). We propose that the 'suggested time scale' is none other than the mental construct commonly called the Geologic Time Scale. This radioactive decay method eventually fell into disuse. “The Rb-Sr whole-rock method was widely used as a dating tool for igneous crystallization during the 1960's and 1970's, but lost credibility during the 1980's as evidence of whole-rock open-system behaviour mounted” (Dickin, p.35).
- By the mid-1960's, “...K-Ar dates began to be correctly viewed as cooling dates, rather than some vague age of the rock system” (Armstrong, p.34).
- The K-Ar method was too susceptible to argon loss, so the Rb-Sr method became more favored. However, “Although the problems of loss of daughter product are far less severe in the ^{87}Rb - ^{87}Sr method than in ^{40}K - ^{40}Ar dating, they do as shown, still exist. Even in igneous rocks, discordant mineral dates are more often encountered than concordant dates” (Durrance, p.29). Please read that last quote again.
- In the 1970's, there was renewed reliance in the study of nuclear tracks retained in zircon minerals, called 'fission-track' dating. Why was it chosen? It “...often resulted in minimal annealing and acceptable formation ages” (Hurford, p.34). We suggest that 'acceptable' in context there means 'consistent with the assumption of millions of years. This demonstrates that the belief in millions or billions of years is not taken **from** any evidence, but rather is an *a priori* assumption used to

interpret evidence. Eventually, however, "...Fission-track was re-evaluated leading to a re-orientation of the method as a source primarily of thermochronological information rather than formation ages" (Hurford, p.34).

- In the late 1980's, the Rb-Sr, U-Pb, and Sm-Nd methods were becoming increasingly disfavored. "Each of the above dating systems had at some stage...been alleged to be immune from isotopic resetting under subsolidus conditions. Examples to the contrary have been found..." (Black, .35).

We are stuck with the myth that isotope dating is reliable, when no system yet has been reliable enough for geochronologists to continue using for longer than a few decades, and not reliable enough to produce even a majority of consistent concordant dates.

4) Dates are primarily rejected on an after-the-fact basis, with the presupposition of the million/billion year geologic column as the ultimate criteria for selecting dates. Further, almost any date obtained can be interpreted and rationalized after-the-fact. "In conventional interpretation of K-Ar age data, it is common to discard ages which are substantially too high or too low compared with the rest of the group or with other available data such as the geological time scale" (A. Hayatsu, *Canadian Journal of Earth Sciences*, v. 16, 1979, p.973). The geologic time scale is not data! It is an assumption with little evidence supporting it. Indeed, though it was created in the late 1800's, it has changed only a very little, even though the vast majority of geological data have been gathered **since** it's inception as an interpretive paradigm. We are told that long ages are supported by the geologic time scale. The time scale is said to be supported by isotope dating, but the only dates accepted are those which agree with the preconceived time scale. This is circular reasoning. Here are examples of after-the-fact 'explanations' of discordant data:

- "One of these dates, 29.4 ± 2.2 , on hornblende, is rejected because it is considered too old due to excess argon: the other 26.4 ± 3.2 on plagioclase from the same sample, is geologically reasonable..."

- "The present K-Ar date of 102.0 ± 3.3 Ma is significantly older than the U-Pb date from the same sample and inconsistent with the previously-determined K-Ar dates. This date may reflect a serious problem with excess Ar..." (Hunt, p.39). It also may reflect a serious problem with isotope dating.

- "...there was a wide range of glauconite dates from the same bed, and Odin and Curry (1985) arbitrarily picked certain ones and ignored others that tended to give older ages" (Prothero, p.39).

5) Biostratigraphy, magnetostratigraphy, and isotope dating are all manipulated to form a contrived agreement. Isotope dating is so plastic that any date can be explained after-the-fact if that date does not fit accepted dogma. “In an effort to evaluate a discordant age sequence, therefore, the data are adjusted in one of several ways...until the lead-uranium and lead-lead ages are in agreement” (L.R. Steiff et al., *USGS Professional Paper* 414-E, 1963, p. E1). Correlation of isotope data with some other age indicator processes (only those which might yield million-year results are even considered) such as magnetic field shifts recorded in the orientation of iron in rock are supposed to bolster belief in the millions-of-years system. However, “Clearly, the paleomagnetic interpretation is susceptible to the revisions in radiometric dating and does not reveal disconformities by itself” (Prothero, p.55).

Often magnetic data is “...directionally fully opposite in polarity to the chron that they are within” (Champion, p.55). To explain these discrepancies after-the-fact, rather than question the validity of the method, magnetochronologists blame nature by inventing supposed magnetic field phenomena: rapid reversals, regional excursions, secondary magnetization, and other open-system behaviors. Magnetochronology interpretations are just as moldable as isotope dating. The jumbled, confusing record of magnetic phenomena could be better understood as having been caused by a worldwide, Earth-destroying, cataclysmic flood, as revealed in the Bible. “Geologic time scales are the result of iterative processes, and as new definitive data becomes available, either geochronometric, biostratigraphic, or magnetostratigraphic adjustments will have to be made” (Obradovich, p.56). Assuredly, any adjustments by evolutionists will remain in the narrow millions-of-years view.

6) **High closure temperatures are irrelevant to the supposed closed system status of isotope dating methods because all methods are susceptible to fluid processes.** Isotope decay processes are proclaimed to be extremely reliable because they are closed systems that require tremendous heat to change them. However, “We conclude that the Rb-Sr and Sm-Nd isotopic systems are much more sensitive to metasomatic processes [like chemical reactions in fluid] than is commonly believed” (Frost and Frost, p.59). The problem of such widespread open-system behavior in isotopic systems is illustrated here:

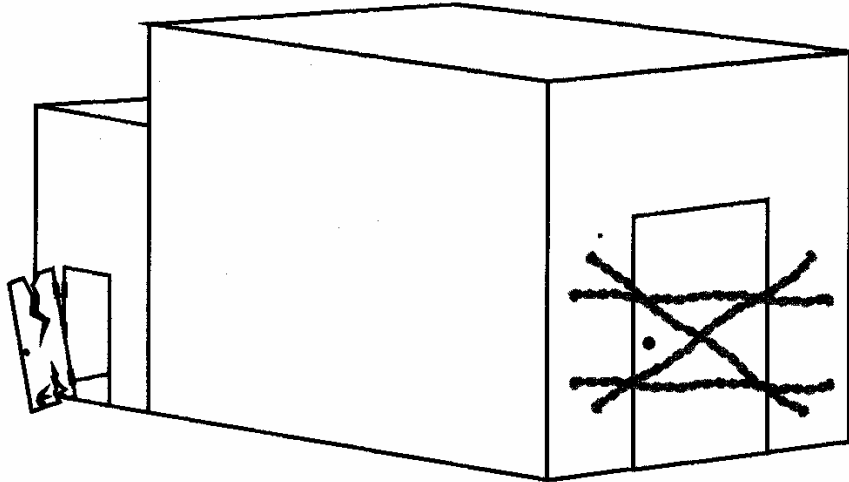


Figure 23. What good is it that the prisoner cannot readily break down the heavily-chained front door when he can easily open the flimsy rear door and escape? Analogously, what good are the high closure temperatures of minerals to isotope diffusion when in fact the “imprisoned,” “radiogenic” isotopes can easily be leached out by comparatively low-temperature, fluid-dominated processes?

[From Mythology, p. 58]

“A combination of elevated temperatures and ground-water percolation can leach away a proportion of the uranium present in rock crystals” (J.D. Macdougall, *Scientific American*, v.235, 1976, p.114). “As much as 80% of the potassium in a small sample of an iron meteorite can be removed by distilled water in 4.5 hours” (L.A. Rancitelli et al., *Planetary Sciences Abstracts*, 48th Annual Meeting, p.167). “The U-Pb and Rb-Sr systems are known to be highly susceptible to resetting by hydrothermal, diagenetic and metamorphic processes” (Toulkeridis et al., p.28). This point alone could render isotope dating meaningless, especially considering the effects that a worldwide flood would have had on ‘resetting’ parent-daughter ratios of isotope systems.

7) **There is no objective way to distinguish an isochron resulting from long-term radioactive decay from one resulting from geochemical processes.** Isochron plots are graphs which plot the ratio of non-radiogenic daughter product to radiogenic daughter product. They are an attempt to pinpoint more accurately a radiometric date. It is taught that the more linear the points, the more accurate and infallible is the age. However, Woodmorappe has observed in the literature that the date provided by even with a linear isochron of $r = 0.999$ is commonly rejected because it does not fit previously established dates. “Thus, the fit of a regression [plot] is unrelated to the accuracy of the age estimates” (Lutz, p.64). Perhaps this is because “The widely used whole-rock Pb/Pb method of geochronology is highly susceptible to the generation of spurious isochrons” (Whitehouse, p.66). This means that many isochrons line up, but line up at the wrong age. To explain this phenomenon after-the-fact, scientists tell us that either the samples had not been comagmatic in the first place, “and/or they had become open systems since crystallization” (Woodmorappe, p.62). If isochron plots really told us the age of rocks, then why would “The data demonstrate the possibility of producing statistically distinct good-fit whole-rock isochrons from the same body of rock at the same locality” (Smalley et al., p.63)? In other words, the isochron method, like radioisotopic methods used in decades past, produces different dates, even in the same sample.

Woodmorappe lists eight examples of isochron dates that conflict with other isochron dates of the same rock! “Our Rb-Sr date from these localities show no sign of the 375 Ma crystallization age recorded by the data of Adams...” (Pankhurst et al., p.63). Discordant isochron dates testify to plasticity of interpretation and their unreliability. The fact that isochron dates are continually being revised and changed also testifies to their unreliability. Even when given the choice of which data points to plot, “The widely used whole-rock Pb/Pb method of geochronology is highly susceptible to the generation of spurious isochrons, primarily the result of disturbance of U...” (Whitehouse, p.68). Also called, ‘inherited’, ‘apparent’, ‘mantle’, ‘secondary’, ‘source’, ‘erupted’, ‘mixing’, ‘false’ or ‘transposed isochrons’, they are far too commonly observed in a technique that is so widely proclaimed as reliable. “A drawback of the conventional isochron plot is that, in general, the isotope measured with the poorest precision, ^{36}Ar , is common to both axes. A result is that the errors associated with both axes are highly correlated, and may give rise to misleading linear correlations.” (McDougall, p.68). Other spurious isochrons are attributed to chance: “...the data array in Fig. 4 may well be an effect of pure coincidence” (Blankenburg, p.68). Other

phenomena used to explain discordant isochron dates after-the-fact are: K-exchange, Ar-exchange, open system behavior, mixing, assimilation, or metasomatic alteration.

“There is no reliable objective way to assess the validity of given whole-rock (or mineral) isochron using the regressed data alone, or in combination with element concentration data.” How then, is the validity assessed? “...In the light of all available field, petrographic, geological, geochemical, and other geochronological evidence” (Whitehouse et al., p.71). The validity is assessed in the ‘light’ of the limited million/billion-year mindset. “This and other studies show that metasedimentary rocks can yield linear arrays of points on isochron diagrams, but that the age can have a variety of geological meanings and need not define the date of deposition...[!]” (M. Spanglet et al., *Bulletin, Geological Society of America*, v.89, 1978, p.783-790). Isochron plots are unreliable as age determinants. It is possible that they are meaningless as such.

Philosophical import of these conclusions: “Our most important finding is that no dating technique gives a reliable emplacement age in all cases...” (Fleck, p.81). If these seven conclusions are true, then isotope dating is not. Age studies have been conducted in scores of other fields that indicate ages far less than millions of years. Henry Morris, in *The Biblical Basis For Modern Science*, lists 107 processes used to indicate the age of the Earth. Many of them are erosion rate measurements, and the majority of them indicate a young Earth. Why are these valid investigations (all of which are subject to at least the three main assumptions described above) not considered by evolutionists?

Conclusions of the following investigations are contrary to evolutionist thinking, but consistent with Biblical revelation. “...Taking the average height of the United States above sea level as 2300 feet and assuming that the rates of erosion reported here are representative, we find that it would take 11 to 12 million years to move to the oceans a volume equivalent to that of the United States lying above sea level. At this rate there has been enough time since the Cretaceous to destroy such a landmass six times” (Judson and Ritter, *Journal of Geophysical Research*, v.72, 1967, p.3395). Polonium radiohalos indicate that some rocks must have been formed almost instantaneously. The decay of the Earth’s magnetic field indicates a young Earth. The recession rate of the Moon points to a young Earth. The diffusion rate of oil in porous rocks indicates a young Earth. The Sun is possibly shrinking, and may have been too bright for life to exist only hundreds of thousands of years ago. If radioactive decay has been ongoing for millions of years,

where is all the atmospheric helium that should have been produced? These investigations are valid and deserve further attention.

There is a spiritual reason that these and many other processes are not considered by evolutionists: if the earth is young, then the Bible may be true. If the Bible is true, then we are accountable to our Creator. Because the God of the Bible is holy and just, we would have to admit to Him our shortcomings in order to be reconciled to Him. “But men loved darkness rather than light” (John 3:19). “And they worshipped and served the creation rather than the Creator” (Romans 1:25). We certainly do this when we attribute the intricate designs of God as being products of nature.

With the acceptance of the idea of a Creator comes the possibility that He reveals Himself through His Word. In court, written records are some of the best forms of evidence; better than many inferences made from circumstantial evidence, which is what radioisotope dating is. Written records involve eyewitness accounts and are not subject to the three assumptions that apply to timeclock processes. The Bible is such an accurate written record; so accurate that it is used to predict archaeological and scientific finds.

It is a logical necessity that our universe had a beginning, and must therefore have had an outside causing agent (God). Since we cannot go back to the time of this initial cause, it must be known by faith. However, it is equally faith-based to believe that the universe framed by itself over eons. However, this faith position not reasonable since nothing that had a beginning could ever cause itself. The faith of many evolutionists is astounding. It is our hope that the consideration of the mythology of modern dating methods, the investigation of various other worthwhile timeclocks, and study of the reliability of the Bible will bring greater understanding to many.